

## **REMARKS**

By the present communication claims 29-36 and 41 have been canceled without prejudice to pursuing the subject matter of these claims in one or more applications claiming priority to the above-captioned application. Claims 52, 55 and 57 have been amended to correct antecedent basis. Following entry of the amendments, claims 37-40, 42-52 and 55-57 will be pending and under examination.

### **Claim Objections**

Claims 39 and 40 are objected to for omitting identifier “c).” Applicant would like to thank the Examiner for pointing out this typographical error. The claims have been amended to include the identifier “c)” where appropriate.

### **Double Patenting**

The Office Action objects to claims 29 and 37 under 37 C.F.R. 1.75 as allegedly substantial duplicates of each other. The Office Action also objects to claim 41 as being a substantial duplicate of claims 37-40. Claims 29 and 41 have been cancelled, thereby rendering the rejection moot.

### **Rejections Under 35 U.S.C. § 103**

Claims 29-51, 55 and 57 are rejected under 35 USC § 103(a) as allegedly obvious over Whitehead, et al. (U.S. 4,879,097) in view of Kolehmainen, et al. (U.S. 4,349,510) and Tajima et al. (U.S. 5,682,232), taken further in view of Walt et al. (US 6,327,410).

The rejection is moot with regard to claims 29-36 and 41 as these claims have been canceled. Applicant respectfully traverses the rejections of claims 37-40, 42-51, 55 and 57, for the reasons already of record. Further to the reasons already made of record, Applicant traverses the rejection on the following grounds. In the previous response, Applicant presented reasons why there would not have been any motivation to modify the device of Whitehead et al. in view of Kolehmainen et al. and Tajima et al. to further include assay locations having a sample

solution comprising a plurality of different target analytes having a fluorescent label, as allegedly provided by Walt et al. In the section entitled “response to arguments,” the Office Action provides two rebuttals which will be addressed in order below.

In the first rebuttal, the Office Action asserts that one would have been motivated to replace the solid supports of Whitehead et al. with the fiber optic supports of Walt et al. because Whitehead et al. suggests that fiber optic supports can be used. See page 19, lines 3-11 of the Office Action. Applicant does not see the relevance of the Office’s response regarding solid supports to Applicant’s position relating to the composition of the sample solution in the assay locations. Whether or not the device of Whitehead et al. in view of Kolehmainen et al. and Tajima et al. is modified to include the fiber optic supports of Walt et al., there would not have been any motivation to modify the device to include sample solutions having fluorescently labeled analytes in the assay locations. The device of Whitehead et al. is configured for detection of luminescence. Any motivation to modify this device to include target analytes having fluorescent labels would have required a teaching or suggestion of modifying the Whitehead et al. device to detect fluorescence instead of luminescence. As pointed out in the MPEP, at 2143.01(IV)

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)

To modify the device of Whitehead et al. to detect fluorescence instead of luminescence would have changed the principle of operation of the device. Thus, those skilled in the art would not have been motivated to make the modification suggested by the Office Action.

Furthermore, changing the device of Whitehead et al. from one that detects luminescence to one that can detect fluorescence would have required several modifications including, for example, addition of a light source capable of exciting fluorescence of the target analytes having fluorescent labels and addition of a light filter to prevent excitatory light from exposing the film used in the Whitehead et al. device for detection of analytes. This would make the device substantially more complex. Yet, Whitehead et al. touts the simplicity of the luminescence

detection device in comparison to other devices. Specifically, by way of introducing their device Whitehead et al. state in the background

In the recording of luminescence reactions, it has previously been proposed to utilize very sophisticated and expensive equipment in which either one test is conducted at a time using, for example a photomultiplier tube to measure the luminescence characteristics of a reaction being studied or several photomultipliers are used to monitor several reactions simultaneously. This is not only time consuming but also requires the use of expensive equipment. In order to overcome this problem, it has also been proposed to utilize a photographic technique where luminescence reactions are analysed using containers or vessels to hold the reactants and an instant photographic film to record luminescence.

See column 1, lines 51-64 of Whitehead et al. Whitehead et al. go on to describe several other devices at column 2 and then conclude that

None of the last-described six devices is of a design which lends itself to recording photographically in a simple manner of a large number of luminescence reactions which are required to be initiated simultaneously.

See column 3, lines 8-11 of Whitehead et al. The subsequent teaching by Whitehead et al. is narrowly focused on detection of luminescence using simple photographic methods. The teachings cited above, along with the absence of any teaching directed to fluorescence detection, indicates that modification of the Whitehead et al. device to detect luminescence rather than fluorescence would change the principle of operation of the Whitehead et al. device and would further make the device more complex—a direction which Whitehead et al. teaches away from. Therefore, Applicant submits that there would not have been any motivation to modify the device of Whitehead et al. in view of Kolehmainen et al. and further in view of Walt et al. to further include assay locations having a sample solution comprising a plurality of different target analytes having a fluorescent label.

Although Applicant believes that the reasons set forth above are sufficient to overcome the rejection, the following independent reasons are provided as an alternative and to address the second rebuttal found in the “response to arguments” section of the Office Action. Here the Office Action asserts that Walt et al. does not require that sample solution be removed from the

array allegedly because Walt is capable of detecting binding between an analyte in solution with the detection array and because any analyte in the solution that does not bind the array is not detected. See page 19, lines 12-17 of the Office Action. Applicant respectfully disagrees. Excitatory light directed to the array in accordance with the teaching in Walt et al. would also contact the sample solution which surrounds the array. If the sample solution had a plurality of different target analytes having fluorescent labels as claimed, then the labels in solution would be excited along with any labels bound to the array. Thus, contrary to the assertion made in the Office Action the analytes in solution would indeed be detected. In order to distinguish locations of the array that had bound fluorescently labeled target analytes, those skilled in the art would have been motivated to avoid background fluorescence by excluding target analytes having the fluorescent labels from the surrounding solution. Thus, one skilled in the art would not have been motivated to modify the device of Whitehead et al. in view of Kolehmainen et al. and further in view of Walt et al. to include a sample solution comprising a plurality of different target analytes having a fluorescent label, as claimed.

Applicant respectfully submits that claims 29-51, 55 and 57 are not obvious over Whitehead, et al. in view of Kolehmainen, et al. and Tajima et al., taken further in view of Walt et al. for the reasons set forth above. Therefore, reconsideration and withdrawal of the rejection is respectfully requested.

Claim 52 is rejected under 35 USC § 103(a) as allegedly obvious over Whitehead, et al. in view of Kolehmainen, et al., Tajima et al. and Walt et al. taken further in view of Heffelfinger et al. (U.S. 5,784,152). Applicant respectfully traverses the rejection. Applicant maintains that the combination of Whitehead et al., Kolehmainen et al. and Tajima et al. does not teach or suggest the claimed hybridization chamber including the recited sample solution comprising a plurality of different target analytes having a fluorescent label for the reasons set forth above in response to the rejection of claims 29-51, 55 and 57. Heffelfinger et al. is relied upon for describing a temperature controlled incubator and as such does not cure the deficiencies of the other references in regard to lacking a teaching or suggestion of making or using a sample solution comprising a plurality of different target analytes having a fluorescent label. Therefore,

claim 52 is not obvious over Whitehead, et al. in view of Kolehmainen, et al., Tajima et al. and Walt et al. and further in view of Heffelfinger et al. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 56 is rejected under 35 USC § 103(a) as allegedly obvious over Whitehead, et al. in view of Kolehmainen, et al., Tajima et al. and Walt et al. taken further in view of Balch (U.S. 6,083,763).

Applicant maintains, for the reasons of record, that claim 56 is not obvious over Whitehead, et al., in view of Kolehmainen, et al., Tajima et al. and Walt et al., taken further in view of Balch. Claim 56 requires that the second array component is not a fiber optic array. In contrast, the rejection set forth in the Office Action requires that the second array component is a fiber optic array. This is because the Office Action relies on the description of fiber optic substrates in the cited art as a basis for combining them. Specifically, the Office Action states

The reference of Whitehead et al. discloses that the disclosed supports (129) can take on the form of fiber optic sensors (See column 9, lines 61-66).

The reference of Walt et al. discloses that the use of a substrate including discrete sites and a population of microspheres comprising first and second subpopulations distributed on the discrete sites wherein each subpopulation includes a distinct bioactive agent is known in the art (See column 4, line 35, to column 5, line 31)

In view of this teaching, it would have been obvious to one of ordinary skill in the art to employ the fiber optic sensor devices disclosed in the reference of Walt et al. in the system of the reference of Whitehead et al. for the known and expected result of providing means recognized in the art for contacting a fiber optic sensor with a sample for analyte detection.

See page 6, line 14, through page 7, line 1 of the Office Action; emphasis added. Thus, the very element that is relied upon for combining references, a fiber optic sensor, is absent in claim 56. There would not have been any motivation to combine the references in the absence of a fiber optic sensor. The Balch reference does not cure this deficiency because it does not provide any motivation to make the alleged combination. Therefore, claim 56 is not obvious over Whitehead, et al., in view of Kolehmainen, et al., Tajima et al. and Walt et al., taken further in view of Balch. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 39-47, 49-51 and 55 are rejected under 35 USC § 103(a) as allegedly obvious over Walt et al. in view of Rushbrooke et al. (US 4,922,092). In making the rejection, the Office Action points out that Walt et al. “does not specifically disclose the use of a base plate or first array component for holding the sample solution and an associated lid for contacting the second array component with the first array component.” The Office Action alleges that Rushbrooke provides that which is missing in Walt et al.

Applicant respectfully traverses the rejection. A prima facie case of obviousness has not been established because the Office Action has not provided sufficient motivation to combine the references. For motivation the Office Action alleges that “it would have been obvious to one of ordinary skill in the art to interface the detection arrays of the reference of Walt et al. with a plurality of sample solutions in the manner suggested by the reference of Rushbrooke et al. for the known and expected result of providing an art recognized means for interfacing an optical sensor with a sample solution.” Thus, the Office Action effectively alleges that it would have been obvious to combine claimed elements for the known and expected result of providing an art recognized means for combining the claimed elements. The Office Action provides no motivation other than this notion that the references would have been combined because they were capable of being combined. On this issue, the MPEP, at 2143.01 (III) points out that

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)

Therefore, there would not have been any motivation in the art to arrive at claims 39-47, 49-51 and 55. Accordingly, the claims would not have been obvious over Walt et al. in view of Rushbrooke et al. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 29-51, 55 and 57 are rejected under 35 USC § 103(a) as allegedly obvious over Walt et al. in view of Rushbrooke et al. taken further in view of Paffhausen et al. Applicant respectfully traverses the rejection. In making the rejection the Office Action relies on the combination of Walt et al. and Rushbrooke et al. set forth in regard to rejection of claims 39-47, 49-51 and 55. Applicant maintains that there would not have been any motivation to combine

the references of Walt et al. and Rushbrooke et al. for the reasons set forth above in response to the obviousness rejection of claims 39-47, 49-51 and 55. Paffhausen et al. is relied upon for allegedly describing a base plate including a cavity for supporting microwell plates. As such, Paffhausen et al. does not provide the missing motivation to combine the other two references. Absent any motivation in the art of record to make the alleged combination of references, claims 29-51, 55 and 57 would not have been obvious over Walt et al. in view of Rushbrooke et al. taken further in view of Paffhausen et al. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 52 is rejected under 35 USC § 103(a) as allegedly obvious over Walt et al. in view of Rushbrooke et al. taken further in view of Heffelfinger et al. Applicant respectfully traverses the rejection. In making the rejection the Office Action relies on the combination of Walt et al. and Rushbrooke et al. set forth in regard to rejection of claims 39-47, 49-51 and 55. Applicant maintains that there would not have been any motivation to combine the references of Walt et al. and Rushbrooke et al. for the reasons set forth above in response to the obviousness rejection of claims 39-47, 49-51 and 55. Heffelfinger et al. is relied upon for allegedly describing a temperature controlled incubator. As such, Heffelfinger et al. does not provide the missing motivation to combine the other two references. Absent any motivation in the art of record to make the alleged combination of references, claim 52 would not have been obvious over Walt et al. in view of Rushbrooke et al. taken further in view of Heffelfinger et al. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 56 is rejected under 35 USC § 103(a) as allegedly obvious over Walt et al. in view of Rushbrooke et al. taken further in view of Balch. Applicant respectfully traverses the rejection. In making the rejection the Office Action relies on the combination of Walt et al. and Rushbrooke et al. set forth in regard to rejection of claims 39-47, 49-51 and 55. Applicant maintains that there would not have been any motivation to combine the references of Walt et al. and Rushbrooke et al. for the reasons set forth above in response to the obviousness rejection of claims 39-47, 49-51 and 55. Balch et al. is relied upon for allegedly describing the use of a CCD imager without the use of fiber optic structures. As such, Balch et al. does not provide the

missing motivation to combine the other two references. Absent any motivation in the art of record to make the alleged combination of references, claim 56 would not have been obvious over Walt et al. in view of Rushbrooke et al. taken further in view of Balch et al. Reconsideration and withdrawal of the rejection is respectfully requested.

**Double Patenting**

Claims 39-47, 49-51 and 55 are rejected on the ground of nonstatutory obvious-type double patenting as allegedly unpatentable over claims 1-30 of US 6,429,027 in view of Rushbrooke et al. In making the rejection, the Office Action points out that claims 1-30 of US 6,429,027 “do not specifically disclose the use of a base plate or first array component for holding the sample solution and an associated lid for contacting the second array component with the first array component.” The Office Action alleges that Rushbrooke et al. provides that which is missing in the patented claims.

Applicant respectfully traverses the rejection. A prima facie case of obviousness has not been established because the Office Action has not provided sufficient motivation to combine the references. For motivation the Office Action alleges that “it would have been obvious to one of ordinary skill in the art to interface the detection arrays of the patented claims with a plurality of sample solutions in the manner suggested by the reference of Rushbrooke et al. for the known and expected result of providing an art recognized means for interfacing an optical sensor with a sample solution.” Thus, the Office Action effectively alleges that it would have been obvious to combine claimed elements for the known and expected result of providing an art recognized means for combining the claimed elements. The Office Action provides no motivation other than this notion that the references would have been combined because they were capable of being combined. On this issue, the MPEP, at 2143.01 (III) points out that

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)

Therefore, there would not have been any motivation in the art to arrive at claims 39-47, 49-51 and 55. Accordingly, the claims would not have been obvious over the patented claims in view of Rushbrooke et al. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 29-51, 55 and 57 are rejected on the ground of nonstatutory obvious-type double patenting as allegedly unpatentable over claims 1-30 of US 6,429,027 in view of Rushbrooke et al. taken further in view of Paffhausen et al. Applicant respectfully traverses the rejection. In making the rejection the Office Action relies on the combination of the patented claims and Rushbrooke et al. set forth in regard to the double patenting rejection of claims 39-47, 49-51 and 55. Applicant maintains that there would not have been any motivation to combine the patented claims and Rushbrooke et al. for the reasons set forth above in response to the double patenting rejection of claims 39-47, 49-51 and 55. Paffhausen et al. is relied upon for allegedly describing a base plate including a cavity for supporting microwell plates. As such, Paffhausen et al. does not provide the missing motivation to combine the other two references. Absent any motivation in the art of record to make the alleged combination of references, claims 29-51, 55 and 57 would not have been obvious over the patented claims in view of Rushbrooke et al. taken further in view of Paffhausen et al. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 52 is rejected on the ground of nonstatutory obvious-type double patenting as allegedly unpatentable over claims 1-30 of US 6,429,027 in view of Rushbrooke et al. taken further in view of Heffelfinger et al.. Applicant respectfully traverses the rejection. In making the rejection the Office Action relies on the combination of the patented claims and Rushbrooke et al. set forth in regard to the double patenting rejection of claims 39-47, 49-51 and 55. Applicant maintains that there would not have been any motivation to combine the patented claims and Rushbrooke et al. for the reasons set forth above in response to the double patenting rejection of claims 39-47, 49-51 and 55. Heffelfinger et al. is relied upon for allegedly describing a temperature controlled incubator. As such, Heffelfinger et al. does not provide the missing motivation to combine the other two references. Absent any motivation in the art of record to make the alleged combination of references, claim 52 would not have been obvious

over the patented claims in view of Rushbrooke et al. taken further in view of Heffelfinger et al. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 56 is rejected on the ground of nonstatutory obvious-type double patenting as allegedly unpatentable over claims 1-30 of US 6,429,027 in view of Rushbrooke et al. taken further in view of Balch. Applicant respectfully traverses the rejection. In making the rejection the Office Action relies on the combination of the patented claims and Rushbrooke et al. set forth in regard to the double patenting rejection of claims 39-47, 49-51 and 55. Applicant maintains that there would not have been any motivation to combine the references of the patented claims and Rushbrooke et al. for the reasons set forth above in response to the double patenting rejection of claims 39-47, 49-51 and 55. Balch et al. is relied upon for allegedly describing the use of a CCD imager without the use of fiber optic structures. As such, Balch et al. does not provide the missing motivation to combine the other two references. Absent any motivation in the art of record to make the alleged combination of references, claim 56 would not have been obvious over the patented claims in view of Rushbrooke et al. taken further in view of Balch et al. Reconsideration and withdrawal of the rejection is respectfully requested.

The Office Action alleges that commonly assigned US 6,429,027 would form the basis for a rejection under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting claims were not commonly owned at the time the invention in this application was made. In order to preclude a rejection under 35 U.S.C. 103(a) Applicant submits the following statement.

**Statement Concerning Common Ownership**

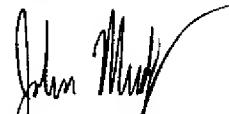
Application 09/606,369 and U.S. 6,429,027 were, at the time the invention of Application 09/606,369 was made, owned by Illumina, Inc.

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**CONCLUSION**

In light of the Amendments and Remarks herein, Applicant submits that the claims are in condition for allowance and respectfully request a notice to this effect. The Examiner is invited to call the undersigned agent should there be any questions.

Respectfully submitted,



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